DOE F 1325.B
(8-89)
EFG (07-90)

United States Government **Department of Energy**

memorandum

DATE: August 4, 2006

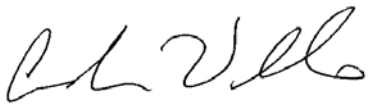
REPLY TO ATTN OF: Office of Air, Water and Radiation Protection Policy and Guidance (EH-41):Boulos:6-1306

SUBJECT: Information - Analysis of the Environmental Protection Agency's (EPA) Final Rule on the Air Quality Modeling Guideline.

TO: Distribution

The EPA has issued a final rule that addresses the regulatory application of air quality models for estimating ambient air pollutant concentrations under a number of Clean Air Act programs. The purpose of this memorandum is to provide Department of Energy (DOE) program and field offices with an analysis of the rule (attached). The *Guideline on Air Quality Models* is used by DOE and DOE contractor staff for estimating pollutant concentrations from proposed sources in Prevention of Significant Deterioration (PSD) studies associated with new source permits to construct; other Departmental uses would include visibility modeling, and non-PSD air quality assessments for new sources reported in National Environmental Policy Act documents. EPA periodically issues updates to the guideline to reflect evolving air modeling technology and to address new regulatory requirements. The rule is available at the DOE Environmental Policy and Guidance Web site: http://www.eh.doe.gov/oepa/rules/70/70fr68218.pdf.

Questions on the final rule can be directed to Mr. Emile Boulos (emile.boulos@eh.doe.gov; 202-586-1306) or Mr. Ted Koss (theodore.koss@eh.doe.gov; 202-586-7964) of my staff).



Andrew Wallo
Director
Office of Air, Water and Radiation
Protection Policy and Guidance

Attachment

ATTACHMENT

Analysis of the Clean Air Act Final Rule on Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions (70 FR 68218; November 9, 2005)

Overview

On November 9, 2005, the Environmental Protection Agency (EPA) issued a final rule (70 FR 68218) amending its *Guideline on Air Quality Models* codified at 40 CFR 51, Appendix W. Additional information related to the final rule and to atmospheric modeling is available at the following EPA Web site: http://www.epa.gov/scram001.

The Department of Energy's Office of Air, Water and Radiation Protection Policy and Guidance issued a memorandum and attachment on September 29, 2003, concerning an earlier revision to the guideline. The memorandum and attachment can be accessed at: http://www.eh.doe.gov/oepa/guidance/caa/aqmodeling.pdf. The guideline is intended to provide a common basis for estimating the air quality concentrations of criteria pollutants[1] used in assessing control strategies and developing emission limits (70 FR 68229). The guideline was first issued in 1978.

Summary

In the November 9, 2005, rule, EPA recommended a new dispersion model—AERMOD—which replaces the Industrial Source Complex (ISC3) model. EPA states that AERMOD is a best state-of-the-practice Gaussian plume dispersion model whose formulation is based on planetary boundary layer principles, and that AERMOD provides better characterization of plume dispersion than does ISC3 (70 FR 68219). AERMOD can be used for assessment of pollutant concentrations from a variety of sources and can be applied to both simple and complex terrain (70 FR 68253). AERMOD incorporates a new downwash algorithm—PRIME. For plume rise affected by the presence of a building, the PRIME downwash algorithm uses a numerical solution of the mass, energy, and momentum conservation laws (70 FR 68254).

The AERMOD model, as well as other preferred air quality models, is summarized in Appendix A to the guideline (70 FR 68253). For each model, Appendix A provides information on availability, approximate cost (where applicable), regulatory use, data input requirements, output format and options, simulation of atmospheric physics, and accuracy.

---

[1] The Clean Air Act requires EPA to set National Ambient Air Quality Standards for certain pollutants known to be hazardous to human health. EPA has identified and set standards to protect human health and welfare for six pollutants: ozone, carbon monoxide, particulates, sulfur dioxide, lead, and nitrogen oxide. The term *criteria pollutants* derives from the requirement that EPA must describe the characteristics and potential health and welfare effects of these pollutants. It is on the basis of these criteria that standards are set or revised. See: http://www.epa.gov/OCEPAterms/cterms.html.

Also in the November 9, 2005, rule, EPA removed an existing model—the Emissions Dispersion Modeling System (EDMS)—from Appendix A to the guideline and made various editorial changes to update and reorganize information in the guideline.

The final rule was effective on December 9, 2005. Beginning November 9, 2006, AERMOD should be used for appropriate applications as a replacement for ISC3. Until November 8, 2006, protocols for modeling analyses based on ISC3 which are submitted in a timely manner may be approved at the discretion of the appropriate Reviewing Authority (70 FR 68218). The guideline is printed in its entirety beginning at 70 FR 68229. Topics covered in the guideline include:

- Overview of model use
- Recommended air quality models
- Stationary source models
- Models for ozone, particulate matter, carbon monoxide, nitrogen dioxide, and lead
- Other model requirements
- General modeling considerations
- Model input data
- Accuracy and uncertainty of models
- Regulatory application of models.

Air quality modeling involving use of the guideline may be needed in a variety of regulatory applications at DOE sites as suggested in the following representative list.

1. EPA's requirements for prevention of significant deterioration (PSD) permits are in 40 CFR 52.21. All estimates of ambient concentrations required under section 52.21 are to be based on applicable air quality models, data bases, and other requirements specified in the guideline [40 CFR 52.21(l)]. Section 10 of the guideline (Regulatory Application of Models) discusses application of the guideline to PSD permit applications.

2. Qualifying pollution control projects are not major modifications under the 40 CFR 52.21 PSD rules provided certain conditions are met including a demonstration (e.g, through modeling) that the project will not have an adverse air quality impact [40 CFR 52.21(z)(3)].

3. EPA's requirements to assure that non-transportation Federal actions conform to applicable State Implementation Plans are in 40 CFR 93, Subpart B. A proposed action that needs a conformity determination will be deemed to comply with the applicable plan if the criteria in 40 CFR 93.158 are satisfied. Several of these criteria specify the use of air quality modeling. Air quality modeling analyses performed to demonstrate conformity must be based on the applicable air quality models, data bases, and other requirements specified in the guideline, unless the guideline techniques are inappropriate and written approval of the EPA Regional Administrator is obtained for any modification or substitution [40 CFR 93.159(c)].